

## Parameter costs help compare buildings

Parameter costs are more meaningful measures for comparing building costs on a total square foot or cube costs.

The latter are generally misleading when used for cost comparisons. None of these cost comparison tools is so simple, however, that it adjusts for differences in building shapes, finishes, or unusual foundation conditions.

The parameter cost system is superior because it relates the cost of each standard trade to the physical measure (parameter) of the building that is the chief determinant of that trade.

The table below provides parameter

costs and the percentage breakdown of where the building dollar went for three buildings completed between December, 1969, and March, 1970.

The court house in Port Washington, Wis., and the Atlanta office building demonstrate how parameter costs disclose big differentials, which may reflect the owner's preference or unusual costs. The office had 50% more air conditioning tonnage, but lower heating requirements, yet its HVAC cost half as much per square foot of finished area. It had more plumbing fixtures, yet the owner spent half as much for plumb-

ing. By contrast, the owner spent much more for its curtain wall (precast concrete) and glass than the court house.

Building costs reported here are supplied to ENR by leading contractors, all members of ENR's 400 largest contractors in 1969: Holder Construction Co., Atlanta, Joseph P. Jansen Co., Milwaukee, and Leonard Shaffer Associates, Philadelphia.

Previous building parameter cost reports appeared in the ENR cost reports for 12/15/66, 3/16/67, 6/20/68, 12/19/68, 3/20/69, 6/19/69, 9/18/69 and 3/19/70.

Location	Port Washington, Wis.	Philadelphia, Pa.	Atlanta, Ga.
Construction start/complete	Oct '68/Jan '70	Jun '69/Dec '69	July '69/Mar '70
Use of owner	Public	Private	Private
Structure	Rein conc. masonry curtain wall 4 hr.	Struc. steel/metal deck/rein conc. Brick/block load bear n.a.	Precast prestressed conc. Precast conc and glass AAA
Parameter Measures:			
No. of floors excl basement	4	1	5
No. of floors incl basement	5	1	5
Basement plan area	13,843 sf	0	19,453
Basement area, total	13,843 sf	0	0
No. of basement floors	1	—	—
Gross area supported (excl slab on grade)	55,372 sf	—	77,800 sf
Face brick area	5,492 lf	—	6,720 lf
Interior partitions	26,034 sf	25,000 sf	36,508 sf
Curtain wall, incl glass	69,215 sf	0	97,253 sf
Net finished area	26,034 sf	0	2
Other exterior masonry wall	3	—	13 lf
Number of elevators	—	—	81
Store front perimeter	69	—	—
No. of plumbing fixtures (sinks, toilets)	—	—	—
Parking area	open paved 13,000 sf	open paved, 16,182 sf, 22 cars	open, paved, 152,200 sf
Other Measures:			
Ceiling height, typical floor	13 ft 4 in	22 ft	12 ft
Core area	382 sf	—	—
Air conditioning	211 ton, central electric, interior feed	central electric, interior feed	325 ton, central electric, interior feed
No. of rooms	—	—	—
No. of apartments	—	—	—

RADE	Code	Unit	Cost	Parameter Cost:	Total Cost:	Code	Unit	Cost	Parameter Cost:	Total Cost:	Code	Unit	Cost	Parameter Cost:	Total Cost:
General conditions and fee	5	sf	3.61	199,699	11.1	9	sf	1.35	33,870	13.7	5	sf	1.85	144,016	9.6
Excavation	—	—	—	48,872	2.7	—	—	—	0	0	—	—	—	10,698	0.7
Foundation	—	—	—	0	0	—	—	—	0	0	—	—	—	14,588	1.0
Concrete work (clearing, drainage)	—	—	—	2,091	0.1	—	—	—	3,600	1.5	—	—	—	4,863	0.3
Utilities (water, sewerage, electric, gas)	—	—	—	0	0	—	—	—	10,500	4.2	—	—	—	2,917	0.2
Roads, walks	—	—	—	0	0	—	—	—	0	0	—	—	—	0	0
Landscaping	—	—	—	0	0	—	—	—	0	0	—	—	—	0	0
Excavation	3	sf	—	0	0	9	sf	0.42	0	0	3	sf	0.15	26,794	1.8
Foundation	—	—	—	0	0	—	—	—	0	0	—	—	—	0	0
Lessons, plumb	—	—	—	0	0	—	—	—	33,366	13.5	5	sf	1.38	287,873	19.2
Concrete arch or formed concrete	5	sf	3.86	213,569	11.9	9	sf	1.33	35,955	14.5	—	—	—	4,863	0.3
Exterior masonry	10	sf	2.40	62,603	3.5	—	—	—	0	0	—	—	—	0	0
Interior masonry	7	lf	7.37	40,466	2.3	—	—	—	0	0	—	—	—	0	0
Stone, granite, marble	10	sf	4.29	111,785	6.2	—	—	—	0	0	—	—	—	0	0
Structural steel	—	—	—	0	0	9	sf	1.25	31,224	12.6	—	—	—	0	0
Miscellaneous metal, including stairs	2	flr	6,521	32,605	1.8	—	—	—	0	0	2	flr	3,696	18,478	1.2
Ornamental metal	—	—	—	0	0	—	—	—	0	0	—	—	—	0	0
Plumbing	7	sf	18.74	102,947	5.7	—	—	—	2,800	1.1	7	lf	6.82	45,848	3.1
Waterproofing and dampproofing	8	sf	0.25	7,302	0.4	—	—	—	0	0	—	—	—	0	0
Roofing and flashing	3	sf	1.81	25,124	1.4	9	sf	0.57	14,360	5.8	3	sf	1.20	23,341	1.6
Steel doors and frames	2	flr	2,560.60	12,803	0.7	—	—	—	1,495	0.6	2	fl	1,186	5,928	0.4
Steel windows	8	sf	0.63	16,400	0.9	—	—	—	4,100	1.7	—	—	—	0	0
Wood doors, windows and trim	—	—	—	0	0	—	—	—	0	0	2	fl	4,978	24,890	1.7
Hardware	2	flr	3,975.20	19,876	1.1	2	flr	950	950	0.4	8	sf	2.32	7,915	0.5
Glass and glazing, total	8	sf	0.60	15,745	0.9	—	—	—	0	0	12	lf	141.92	84,873	5.7
Store front and lobby only	—	—	—	0	0	—	—	—	0	0	8	sf	1.94	1,845	0.1
Curtain wall	8	sf	1.09	28,252	1.6	—	—	—	0	0	—	—	—	2,918	0.2
Plaster and masonry	9	sf	0.49	33,616	1.9	—	—	—	2,453	1.0	7	lf	8.10	54,413	3.6
Plaster	—	—	—	0	0	—	—	—	881	0.4	13	flxt	60.04	4,863	0.3
Tile work	13	flxt	299.10	20,638	1.1	—	—	—	0	0	—	—	—	0	0
Marazzo	9	sf	0.44	30,701	1.7	—	—	—	1,081	0.4	9	sf	0.33	32,094	2.1
Acoustical ceiling	9	sf	0.26	18,005	1.0	9	sf	0.04	1,082	0.4	9	sf	0.28	27,000	1.8
Resilient flooring	9	sf	0.60	41,331	2.3	—	—	—	0	0	—	—	—	0	0
Carpet	—	—	—	0	0	—	—	—	0	0	—	—	—	0	0
Painting	9	sf	0.41	28,611	1.6	9	sf	0.13	3,170	1.3	9	sf	0.23	22,392	1.5
Outlet partitions	13	flxt	17.49	1,207	0.1	—	—	—	440	0.2	13	flxt	31.85	2,580	0.2
Special waste treatment facilities	—	—	—	0	0	—	—	—	0	0	—	—	—	0	0
Electrician blinds	—	—	—	0	0	—	—	—	0	0	—	—	—	14,102	0.9
Special equipment	—	—	—	14,505	0.8	—	—	—	0	0	—	—	—	13,129	0.9
Elevators	2	flr	15,094	75,470	4.2	—	—	—	0	0	2	flr	12,643	63,215	4.2
Plumbing	13	flxt	1,522.94	105,083	5.8	9	sf	1.18	29,500a	11.9	13	flxt	630.35	51,058	3.4
Printers	—	—	—	0	0	—	—	—	10,100	4.1	—	—	—	0	0
HVAC	9	sf	4.15	286,937	16.0	—	—	—	Incl. in plumbing	6.7	9	sf	2.18	212,000	14.2
Electrical: contracts	9	sf	2.60	179,853	10.0	9	sf	0.66	16,468	6.7	9	sf	0.80	87,302	5.8
Electrical: fixtures	9	sf	0.30	20,713	1.2	9	sf	0.21	5,177	2.1	9	sf	0.81	79,000	5.3
Miscellaneous trades	—	—	—	0	0	—	—	—	0	0	—	—	—	0	0
Parking, outside enclosed	—	—	—	0	0	14	sf	0.29	4,675	1.9	14	sf	0.27	40,973	2.7
Parking, open, paved	—	—	—	0	0	—	—	—	0	0	—	—	—	1,496,725	100.0
TOTAL	—	—	—	1,496,725	100.0	—	—	—	—	—	—	—	—	—	—

a Incl. HVAC • b penthouse • c by owner • d Incl. hoisting • e Includes precast concrete costing \$208,121 and concrete arch costing \$79,747 • f six precast concrete bands, 4 in thick; 2' 11" around first floor; 5' 10" next four; 6' 9" top band.